

What is sustainability in Republican Basin?



Jim Goeke

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HOLDREGE — Republican River Basin Sustainability Task Force members are a few steps closer to fulfilling their mission to define “sustainability” and recommend to the governor and Legislature how to achieve it.

However, there is lots of work still to do on a report due by May 15, 2012.

“I cannot overemphasize how complex these systems are,” said Jim Goeke of North Platte, a hydrogeologist with the University of Nebraska’s Conservation and Survey Division who is tutoring the 26 task force



Sen. Tom Carlson

members on the basin’s physical attributes.

He reviewed some of the complexities at Tuesday’s task force meeting in Holdrege.

Goeke said there is only a limited connection between groundwater and surface water on the mainstem because the river has cut into the valley, leaving gravels and even shale at the surface. “So when you talk about quick-response wells in the Republican Basin, they are geologically determined as much as anything,” he said.

Those wells are identified in integrated water management plans written by natural resources districts and state Department of Natural Resources officials as having the most immediate benefits to river flows if pumping is reduced or stopped. The plans focus on Nebraska’s compliance with the 1943 Republican River Compact.

Goeke said the questionable Ogallala Aquifer-surface water connections apply only to the mainstem.

"The tributaries are much more well-connected," he said, but it takes a longer time for activities along the creeks to affect the river. That delayed response is one reason groundwater-related streamflow depletions have become an issue only in recent decades.

Goeke said the 1935 Republican River Flood and other huge runoff events changed the basin's culture and its hydrology system. The federal government built flood control reservoirs and farmers acted as good stewards by installing field terraces and ponds to help avoid "gully washer events."

The effects of those measures in reducing runoff back to the creeks and river have been studied the past five years by researchers from Kansas and Nebraska universities and the U.S. Bureau of Reclamation. Their report is expected soon.

When task force member Shad Stamm of Benkelman asked if shutting down all irrigation wells in the basin would return flows to 1930s-1940s levels, Goeke said it's doubtful.

DNR Deputy Director Jim Schneider said the basin's virgin water supply was estimated at just under 500,000 acre-feet per year for compact compliance and has been less than that in only two years. "The hydrology certainly has changed, but I don't think the water supply has," he said.

Goeke said basin complexities that make writing a sustainability plan difficult include the different geology and average rainfall from east to west. "I'd love to be able to untie that Gordian knot," he added.

State Sen. Tom Carlson of Holdrege and other task force members cautioned Tuesday that compact compliance and basin sustainability are not the same thing.

For example, Carlson said the Upper Republican NRD has a plan for compact compliance, but studies have found that current groundwater pumping there won't be sustainable in 30 years.

So what is sustainability?

"I don't know what it is," Carlson said. "... A few years ago, we thought water was unlimited. If 18 inches was good, 30 inches were better. We know that's not true. I think we're making headway. We might not like where we go, but let's find the truth."

After a long pause, Goeke said, "I wouldn't want to kowtow to anybody, but I think it would have to be something legally acceptable, that would keep Kansas happy (for compact compliance).

"We don't want to cripple irrigation. It's too important to the economy of southwest Nebraska."

Goeke added that a "managed decline" of an aquifer or river flows is not sustainability.

Carlson said no one wants to hear about the reduced irrigation allocations that might be needed for true sustainability.

"Somehow, sustainability has to have some equity in it," Goeke said. "... Some kind of fairness across the basin has to be part of the effort toward sustainability."

He said there still are opportunities to improve water-use efficiency with more no-till farming, salvaging evapotranspiration water and enhancing groundwater recharge. Goeke agreed that buying water from a senior surface water right holder may be a more feasible sustainability option than idling wells serving thousands of acres.

"Is it possible to give everyone in the basin the amount of water they've come to expect?" asked URNRD General Manager Jasper Fanning of Imperial.

"No," Goeke replied.

Task force member Rod Ely of Guide Rock said what's sustainable varies up and down the river valley. "So what are we going to use to pinpoint it," he asked, a single measure at a certain place or different definitions at different locations?

Task force member Ray Winz of Holdrege defined sustainability with a question: "Do you want to use it all in the next 10 years or use a little bit for perpetuity?"

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